



September 29, 2016

Ms. Erin McCoy
Remedial Project Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Blvd
Lenexa, Kansas 66219

Subject: **Field Summary Trip Report**
Des Moines TCE Site, Des Moines, Iowa
U.S. EPA Region 7 START 4, Contract No. EP-S7-13-06, Task Order No. 0144
Task Monitor: Erin McCoy

Dear Ms. McCoy:

Tetra Tech, Inc. is submitting the attached Field Summary Trip Report regarding site characterization sampling activities at the Des Moines TCE Site in Des Moines, Iowa. If you have any questions or comments, please contact me at (816) 412-1767.

Sincerely,

A handwritten signature in cursive script that reads 'Mike Williams'.

Mike Williams
START Project Manager

A handwritten signature in cursive script that reads 'Ted Faile'.

Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, START Project Officer (cover letter only)

**FIELD SUMMARY TRIP REPORT
DES MOINES TCE SITE
DES MOINES, IOWA**

**Superfund Technical Assessment and Response Team (START) 4
Contract No. EP-S7-13-06, Task Order 0144**

Prepared For:

U.S. Environmental Protection Agency
Region 7
11201 Renner Blvd.
Lenexa, Kansas 66219

September 29, 2016

Prepared By:

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1.0 INTRODUCTION

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division, under contract number EP-S7-13-06, to conduct a site characterization of the Des Moines Trichloroethene (TCE) site (the site) to support an update of a feasibility study (FS) that was prepared in 1996 (Black and Veatch 1996). The purpose of this investigation was to (1) assess impacts on soil, sediment, and surface water at the site; and (2) assess remaining buildings for hazardous substances in anticipation of possible building demolition and redevelopment. This investigation proceeded under authority of the Comprehensive Environmental Response, Compensation, and Liability act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization act of 1986 (SARA).

Tasks of this investigation included collection of the following samples for analyses for chemicals of concern (COC):

- ☐ Wipe samples from building surfaces
- ☐ Building material samples
- ☐ Concrete core samples from building foundations and slabs
- ☐ Sub-slab soil samples (by use of Geoprobe[®] direct-push technology [DPT])
- ☐ Surface water/sediment samples from the South Pond.

2.0 BACKGROUND INFORMATION

Information regarding the site's location and description, and operational and investigative history is as follows:

2.1 SITE LOCATION AND DESCRIPTION

The site is in south-central Des Moines on the east side of the Raccoon River. The site is a 43-acre property formerly operated by DICO, Inc. (DICO). It is southwest of the intersection of W. Martin Luther King Jr. Parkway and SW 16th Street in Des Moines, Polk County, Iowa. The site is in Section 8, Township 78 North, Range 42 West. Geographic coordinates at the approximate center of the site are 41.579293 degrees (°) North latitude and 93.638964° West longitude (see Appendix A, Figure 1).

The site includes a production building, an office building, a maintenance building, and five additional operational buildings. A surface water feature at the south end of the site is referred to as the "South Pond" (see Appendix A, Figure 2).

Surface water across the site generally drains from north to south. Surface water also collects in the South Pond and overflows into the east drainage ditch. The southern portion of the site is within the Raccoon River flood plain. The South Pond is a wetland.

Site geology consists of about 50 feet of alluvial sands and gravel, underlain by about 500 feet of shale and limestone. However, the soil profile on the site property has been altered by use of fill material to raise the elevation above flood elevations. The saturated zone begins at about 20 feet below ground surface (bgs). Natural groundwater flow direction at the site follows regional groundwater flow patterns paralleling the Raccoon River toward the south-southeast.

Site Operational and Investigative History

For approximately 40 years, the site hosted a variety of industrial uses/operations that included steel wheel manufacturing, chemical and herbicide distribution, and pesticide formulation processes. Supporting these activities were a grey iron foundry and a steel wheels manufacturing plant. Releases during DICO's operations at the site included the following: TCE, 1,2-dichloroethene (DCE), and vinyl chloride to groundwater; residual pesticides and metals to shallow soils; and pesticides within buildings to soils on the southern end of the property, and within drainage areas. The site has been divided into four operable units (OU):

- OU 1 – groundwater TCE plume on the site
- OU 2 – originated as source soils associated with TCE groundwater contamination, but later focused on residual pesticides and metals in shallow soils
- OU 3 – a source area of tetrachloroethene (PCE) groundwater contamination north of the site
- OU 4 – pesticides in buildings, in soil on the southern end of the site (a.k.a., South Pond Area [SPA]), and in drainage areas of the site.

A groundwater pump and treat (P&T) system has operated at the site since 1987. Since that time, the groundwater plume has been effectively contained on the site. Currently, three extraction wells and an air stripper are in operation. DICO continues to operate and maintain the groundwater P&T system.

Discovery that pesticides and metals in soils presented a health threat occurred during investigation of the OU2 area as a possible source of the groundwater contamination. The same pesticides and metals were also found in OU4 soils and buildings. A series of removal actions in the early 1990s addressed the pesticides and metals in soils and the buildings via cleanup of building surfaces and application of epoxy paint, and by construction of an asphalt cap on most of the site. In March 1994, EPA signed a Unilateral Administrative Order (UAO) to address contamination associated with various interior portions of Buildings 1 through 5 and the Maintenance Building. In 1996, EPA signed a Record of Decision (ROD) for OU2 and OU4 calling for continued maintenance of the asphalt cap and building encapsulation actions, and institutional controls to maintain an industrial land use (EPA 1996). Action levels were set at industrial levels because property use was expected to remain industrial. DICO continues to maintain the asphalt cap. Maintenance requirements for the buildings were reduced when DICO ceased operations inside the buildings. In 2007, DICO erected a 6-foot chain link security fence around much of its property to reduce vandalism of the buildings. Also, DICO dismantled the Maintenance Building and

Buildings 4 and 5 without prior notification to EPA, which resulted in improper disposal of polychlorinated biphenyl (PCB)-contaminated insulation.

In 2015, EPA performed a screening level ecological risk assessment of the SPA as part of OU4. Sediment and surface water samples were collected. A potential significant risk was identified from presence of pesticides and PCBs. As a result, EPA changed the protectiveness statement regarding the site in the 2013 Five-Year Review from “deferred” to “not protective.” EPA suggested a human health assessment because of potential exposure to the homeless community that has resided on site.

The Des Moines Water Works (DMWW), which supplies potable water to the City of Des Moines, is immediately across the Raccoon River west of the site. The design objective for the on-site groundwater extraction system is to prevent TCE-impacted groundwater from migrating beneath the Raccoon River and entering areas used by the DMWW on the west side.

3.0 CURRENT AND ENVISIONED USES OF THE PROPERTY

Manufacturing operations at the site have been discontinued. Currently, the site is used only for operating and maintaining the OUI groundwater extraction and treatment system, maintaining the asphalt cap, and maintaining the buildings pursuant to the UAO and an Operation and Maintenance Plan for the buildings. The site is fenced, and the site owner provides site security.

Land use within the area surrounding the site is changing. Much of this surrounding area has been rezoned. For several years, Des Moines has been planning a major redevelopment project in the River Point West area east of the site. EPA supports redevelopment of the site, and envisions a wide variety of possible uses, assuming the following: (1) the groundwater P&T system continues to operate effectively, (2) protective measures are in place to prevent exposure to contaminated soils and contamination in buildings, and (3) contamination on and under the remaining pads from demolished buildings, and contamination in the remaining buildings are fully characterized and addressed. To these ends, this investigation will include sampling of the buildings and SPA that will support (1) development of a cost estimate for building demolition, and (2) a risk assessment of the SPA to support an amendment to the ROD.

4.0 INVESTIGATION ACTIVITIES

Tetra Tech START collected the following samples within current and former building areas: dust wipes from building structural components, bulk samples of building materials, concrete core samples, and subsurface soil samples from beneath the building slabs. Sediment and surface water samples were collected within the SPA.

Sampling activities occurred from June 6-10, 2016. Mike Williams was the START Project Manager for this investigation. The EPA Remedial Project Manager (RPM) for the project was Erin McCoy. START team members conducting sampling included Adam Watkins, Shane Strobe, and Christin Russell.

Summaries of samples collected during this investigation are in Appendix B, Tables 1-5. A copy of field logbooks is in Appendix C. Standard operating procedures (SOP) and chain-of-custody procedures referenced in the Quality Assurance Project Plan (QAPP) (Tetra Tech 2016) were followed throughout sampling activities to verify integrity of samples from time of collection until submittal to the laboratory for analyses. Samples were delivered to the EPA Region 7 laboratory in Kansas City, Kansas, and Pace Analytical, a START-subcontracted analytical laboratory, for analyses according to the SOPs and methods referenced or described in the QAPP.

4.1 DUST WIPE SAMPLING SUMMARY

Four wipe samples were collected from each of Buildings 1, 2, and 3. Ten wipe samples were collected at the Production Building from building foundation structures such as concrete slab floors and structural steel beams (see Appendix A, Figure 3). The wipe samples were collected by use of sterile gauze pads wetted with hexane. Each wipe sample was collected within a 100-square-centimeter area and placed into a jar with a Teflon-lined lid. Three wipe samples per sample location were submitted to the EPA Region 7 laboratory in Kansas City, Kansas, for analyses for PCBs and organochlorine pesticides. Wipe samples for dioxin analysis were submitted to Pace Analytical.

4.2 BUILDING MATERIALS SAMPLING SUMMARY

Building materials samples were collected as follows: 3 at Building 1, 4 at Building 3, 6 at Building 2, and 11 at the Production Building (see Appendix A, Figure 4). After collection from insulation, wood, brick, etc., by use of a knife, chisel, hammer, or other appropriate hand tool, building materials samples were placed into sample containers. One 32-ounce jar per sample was submitted to the EPA Region 7 laboratory in Kansas City, Kansas, for analyses for PCBs and organochlorine pesticides. One 8-ounce jar per sample was submitted to Pace Analytical for dioxin analysis.

4.3 CONCRETE SAMPLING SUMMARY

Samples of concrete building foundation slabs were collected by use of a DPT rig equipped with a hammer drill attachment. Concrete sample locations coincided with DPT soil boring locations and were generally based on even spatial coverage of the concrete slab areas and not based on any specific suspect areas in each building. Each sample of concrete chips and dust was placed into four 4-ounce jars and submitted to the EPA Region 7 laboratory in Kansas City, Kansas, for analyses for PCBs and organochlorine pesticides. Concrete samples for dioxin analysis were submitted to Pace Analytical in Minneapolis, Minnesota. A total of 17 concrete samples were submitted for laboratory analysis (see Appendix A, Figure 5).

4.4 SUB-SLAB SOIL SAMPLING SUMMARY

To assess distribution of COCs in subsurface soils, soil borings were advanced at 17 locations (2 to 4 per building location). These boring locations coincided with the concrete coring locations discussed above. Sample locations are depicted on Figure 5 in Appendix A.

Plains Environmental Inc. performed DPT drilling by using a track-mounted DPT system, under supervision of START team member Shane Strope. DPT soil borings were terminated at depths ranging between 15 and 25 feet bgs. Soil borings were advanced to depths determined by the on-site EPA RPM based on depth of the water table. Saturated soils were encountered at depths ranging from 13 to 19 feet bgs. On-site soil lithology generally consisted of silty clays intermixed with urban fill material (e.g., red brick, coarse gravels and sands, concrete, black cinders, and charcoal). Saturated, coarse-grained alluvial sands were encountered in multiple borings at depths ranging from 13 to 19 feet bgs. Geologic refusal (i.e., bedrock) was not encountered in any of the borings advanced during this investigation.

A photoionization detector (PID) (ppb MulitRAE) was used to screen continuous soil cores in each boring for volatile organic vapors. PID readings were not detected above 0.0 parts per billion (ppb) in the soil core samples screened during this investigation. Notably, the PID temporarily stopped working during advancements of soil borings SB-11, SB-12, and SB-13.

Soil samples submitted for laboratory analysis included soil samples collected from each boring directly below the concrete (identified as 0-2 feet bgs), and subsurface samples collected within depth intervals of 8-10, 13-15, and 18-20 ft bgs, depending on depth of the water table and field observations (i.e., staining or odors). Black-stained soils with strong odors were detected in soil borings SB-11 (at the north portion of building 2) and in soil borings SB-12 and SB-13 (at building 1, the former boiler room). No staining

or odors were detected in the remaining soil borings advanced during this investigation. No groundwater samples were collected during this investigation per the QAPP (Tetra Tech 2016).

Each soil boring was continuously logged. PID readings, observed staining, and soil lithology were recorded on boring logs presented in Appendix D.

Grab soil samples for volatile organic compounds (VOC) analysis were collected in accordance with EPA SW-846 Method 5035. Each grab soil sample was placed into two 40-milliliter (mL) vials preserved with sodium bisulfate, one 40-mL vial preserved with methanol, and an unpreserved vial for percent moisture analysis. The remaining soil was removed from the sampler and placed in a plastic bag for homogenization, and then transferred to 8-ounce jars. Soil samples were submitted to EPA Region 7 laboratory in Kansas City, Kansas, for analyses for VOCs, PCBs, organochlorine pesticides, and chlorinated herbicides. Soil samples from the shallow sample interval (0-2 feet bgs) at each boring location were submitted to Pace Analytical for dioxin analysis. Because of limited sample volume, only samples for VOCs analysis were collected at SB-6 (13-15 feet bgs), SB-11 (13-15 feet bgs), SB-16 (8-10 feet bgs), SB-16 (13-15 feet bgs), and SB-16 (18-20 feet bgs); only samples for VOCs and organochlorine pesticides analyses were collected at SB-11 (0-2 feet bgs) and SB-12 (0-2 feet bgs).

4.5 SURFACE WATER / SEDIMENT SAMPLING SUMMARY

Tetra Tech collected 10 sediment samples and 2 surface water samples within the SPA. Sediment samples were collected at submerged areas of the pond near the water's edge. One of the two surface water samples was collected at the inlet of the pond, and the other at the outfall of the pond. Sample locations are depicted on Figure 6 in Appendix A.

Sediment samples from the pond were collected within the top 6 inches of pond sediment by use of a hand shovel. Each grab sample collected for VOCs analysis was placed in four 40-mL glass vials. The remaining sediment was placed in a disposable aluminum pie pan for homogenization, and then transferred to 8-ounce jars.

Surface water samples collected for VOCs analysis were collected directly into four 40-ml vials preserved with HCl. Surface water samples collected for analyses for PCBs, organochlorine pesticides, and chlorinated herbicides were collected directly into 1-liter amber glass bottles.

Sediment and surface water samples were submitted to the EPA Region 7 laboratory for analyses for VOCs, PCBs, organochlorine pesticides, and chlorinated herbicides.

4.6 GROUND PENETRATING RADAR STUDY

As a safety precaution, field activities included a ground penetrating radar (GPR) survey to assess possible presence of private subsurface utilities prior to DPT drilling. A Tetra Tech local small business subcontractor, Construction Solution Services Inc. (CSS), which specializes in geophysical services, conducted an integrated geophysical survey by use of multi-phase GPR. The GPR survey occurred within the areas surrounding the soil boring locations (17 locations). If subsurface utility lines were identified, soil boring locations were offset by less than 5 feet to avoid drilling into utility lines. Soil boring locations were approved by the EPA RPM (Erin McCoy) who was on site at the time of field activities.

4.7 QUALITY CONTROL SAMPLING SUMMARY

To evaluate sample quality control (QC), one equipment rinsate blank (water), one field blank (water), and multiple trip blanks (water) were collected, as specified in Section 2.5 of the QAPP form (Tetra Tech 2016). The equipment and field blanks were submitted for analyses for VOCs, PCBs, dioxin, organochlorine pesticides, and chlorinated herbicides. The trip blank samples were submitted for analysis for VOCs.

To assess decontamination procedures applied to Geoprobe soil sampling equipment, the equipment rinsate sample was collected during field activities (as determined by the START Project Manager) following decontamination of the Geoprobe sampler. Decontamination of the Geoprobe sampler and rods proceeded by use of a tap water and Alconox wash and tap water rinse. Following decontamination, the equipment rinsate sample was collected by pouring deionized water, supplied by the EPA Region 7 laboratory, through the soil sampling apparatus (the drilling shoe) and into the appropriate sample containers.

The field blank sample was collected during the sampling event to assess field- and/or laboratory-introduced contamination. START field sampling personnel prepared the field blank sample by pouring deionized water, supplied by the EPA Region 7 laboratory, directly into the sample containers.

The water trip blank samples, prepared by the EPA Region 7 laboratory, accompanied the dedicated VOC sample coolers and were submitted with the samples. Results from analyses of the trip blank samples will determine whether any cross-contamination of samples will have occurred during sample shipment.

Field duplicate samples of wipe samples, concrete samples, soil samples, sediment samples, and surface water samples were submitted at a frequency of at least 5 percent (1 duplicate per 20 samples of each matrix submitted to the lab) to assess total method precision. Analytical results from field duplicate samples will be referenced to calculate the relative percent difference (RPD) between each set of duplicate pair results for each reported analyte. The higher concentration of each analyte in each duplicate sample pair will be used at the discretion of the EPA Project Manager. Analytical accuracy will be determined via analysis of laboratory-prepared spikes and duplicates.

5.0 SUMMARY

START was tasked by EPA Region 7 Superfund Division to support an update of a feasibility study (FS) that required additional investigative sampling. The purpose of this investigation was to (1) assess impacts on soil, sediment, and surface water at the site; and (2) assess remaining buildings for hazardous substances in anticipation of possible building demolition and redevelopment.

Tetra Tech START collected the following samples within current and former building areas: dust wipes from building structural components, bulk samples of building materials, concrete core samples, and subsurface soil samples. Sediment and surface water samples were collected within the SPA.

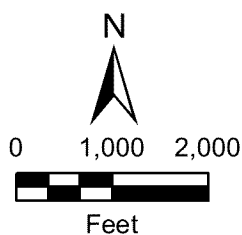
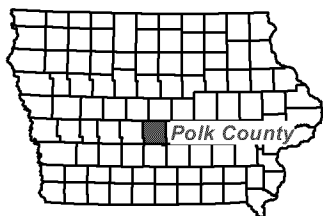
Sampling activities occurred from June 6-10, 2016. Mike Williams was the START Project Manager for this investigation. The EPA RPM for the project was Erin McCoy. START team members conducting the sampling included Adam Watkins, Shane Strobe and Christin Russell.

6.0 REFERENCES

- Black & Veatch. 1996. Feasibility Study for the Des Moines TCE Site, Operable Unit No. 2 and 4, Des Moines, Iowa. May 30.
- Tetra Tech. 2016. Quality Assurance Project Plan for Site Characterization Sampling Activities. Des Moines TCE Site, Des Moines, Iowa. May 23.
- U.S. Environmental Protection Agency (EPA). 1996. EPA Superfund Record of Decision, Des Moines TCE, EPA ID: IAD980687933, OU 02, 04, Des Moines, IA. December 13.

APPENDIX A

FIGURES



Des Moines TCE Site
Des Moines, Iowa

Figure 1
Site Location Map

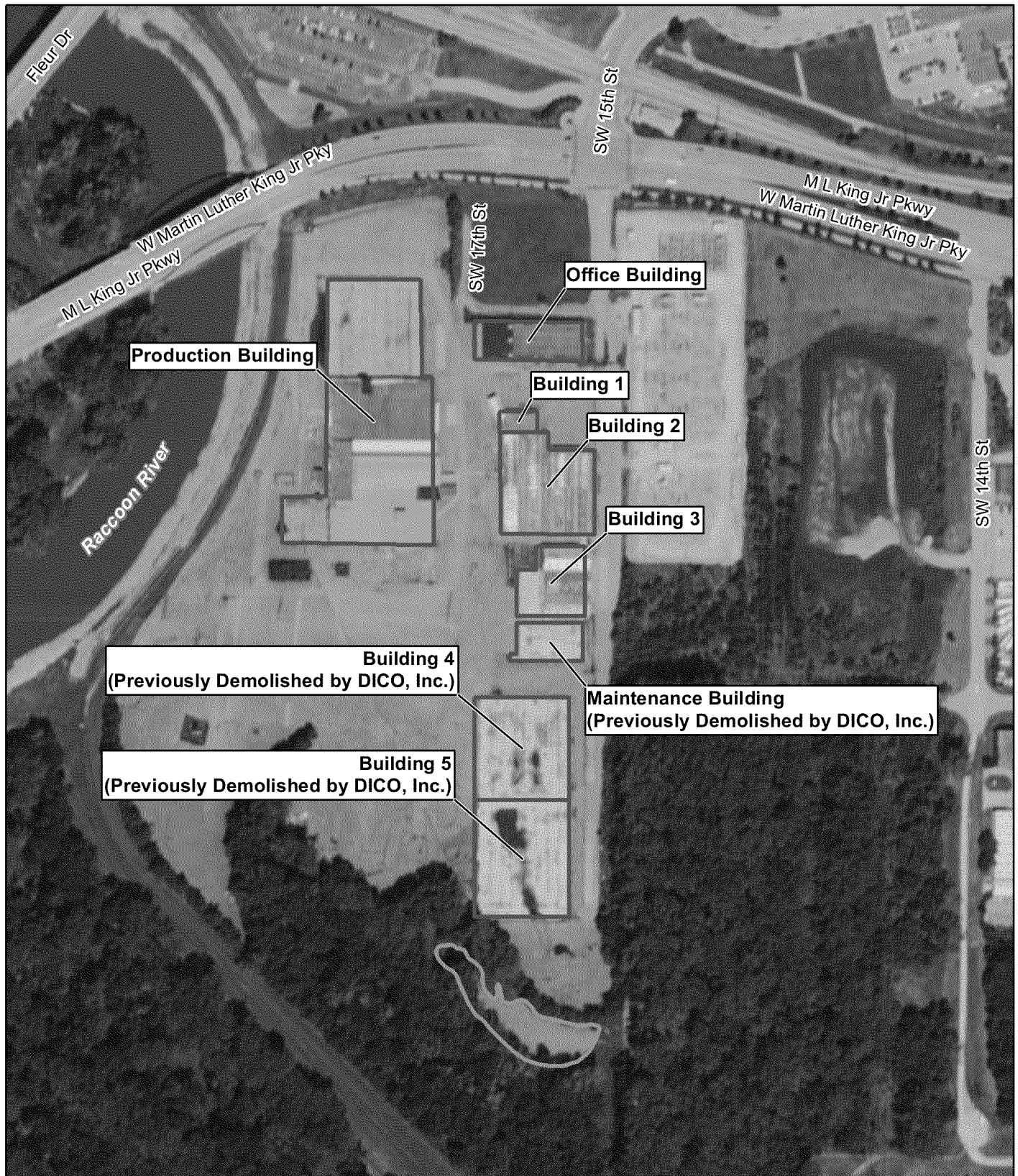


Source: USGS Des Moines SW, IA 7.5 Minute Topo Quad, 1976
USGS Des Moines SE, IA 7.5 Minute Topo Quad, 1976

Date: 9/29/2016



Drawn By: Nick Wiederholt

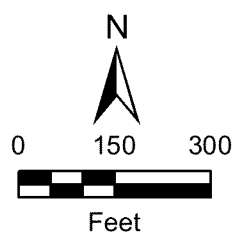
Project No: X9025.16.0144.000



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Legend

-  Building location
-  South pond location



Source: ESRI, ArcGIS Online Maps, World Imagery, 2014; HSIP Gold, 2007

Des Moines TCE Site
Des Moines, Iowa

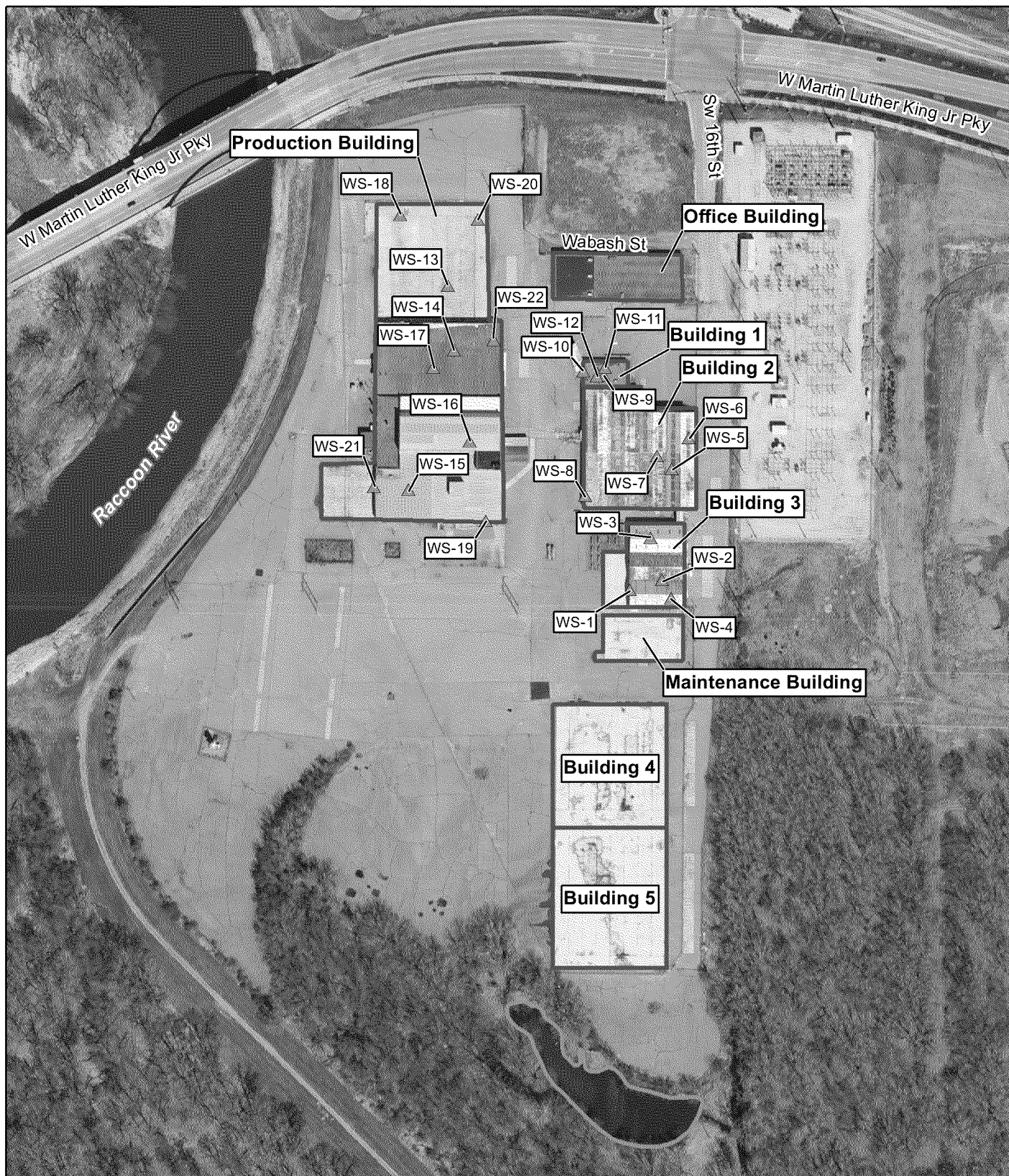
Figure 2
Site Layout Map






Date: 9/29/2016

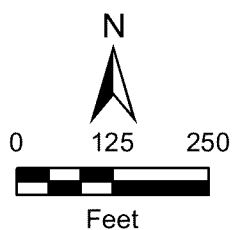
Drawn By: Nick Wiederholt

Project No: X9025.16.0144.000



Legend

-  Wipe sample location
-  Building location
-  South pond location



Des Moines TCE Site
Des Moines, Iowa

Figure 3
Wipe Sample Location Map

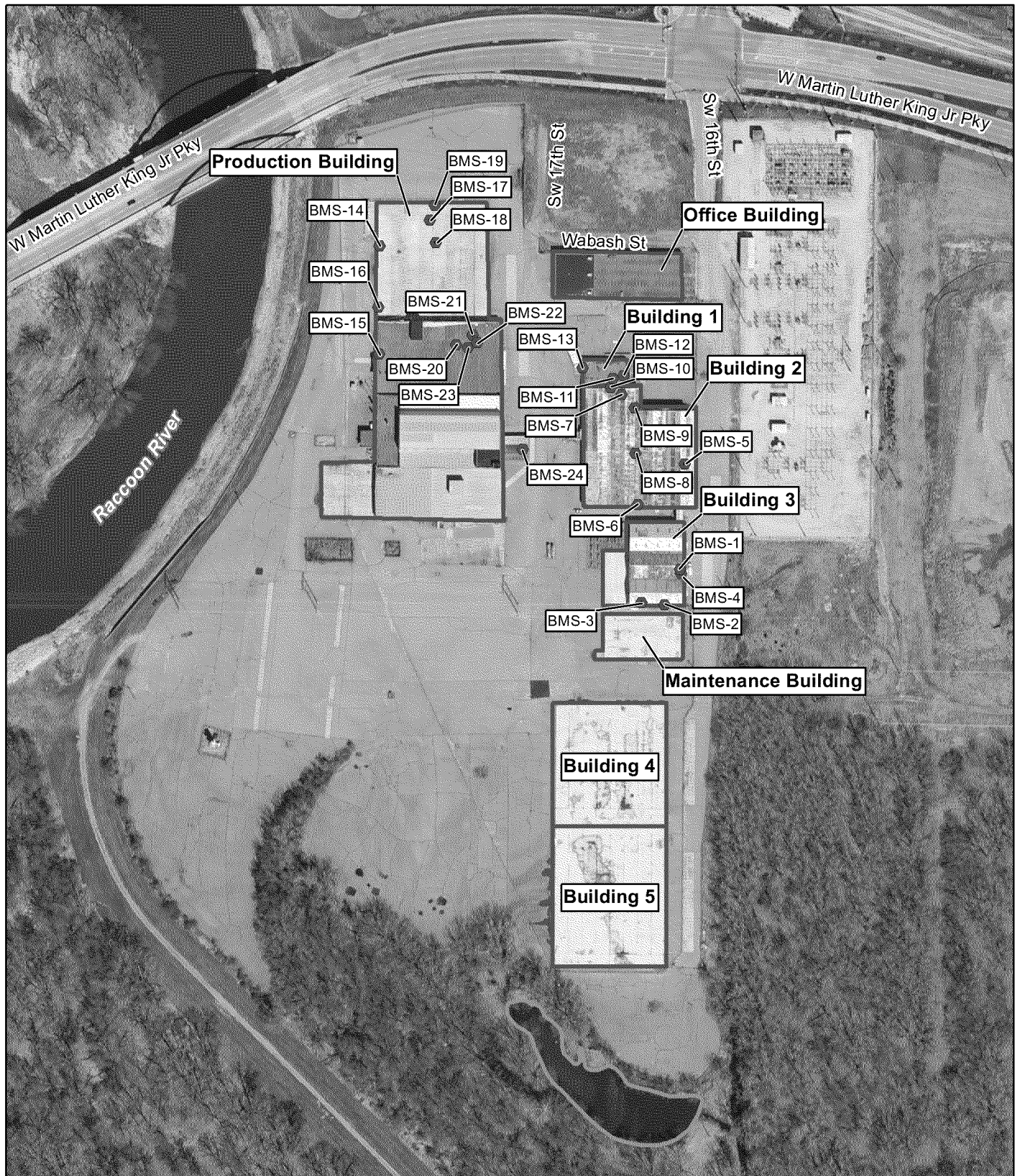


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Date: 9/29/2016

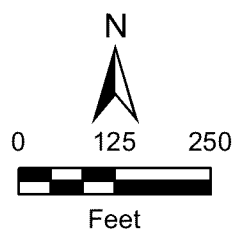
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Project No: X9025.16.0144.000



Legend

- Building material sample location
- Building location
- South pond location



Des Moines TCE Site
Des Moines, Iowa

Figure 4
Building Material Sample Location Map

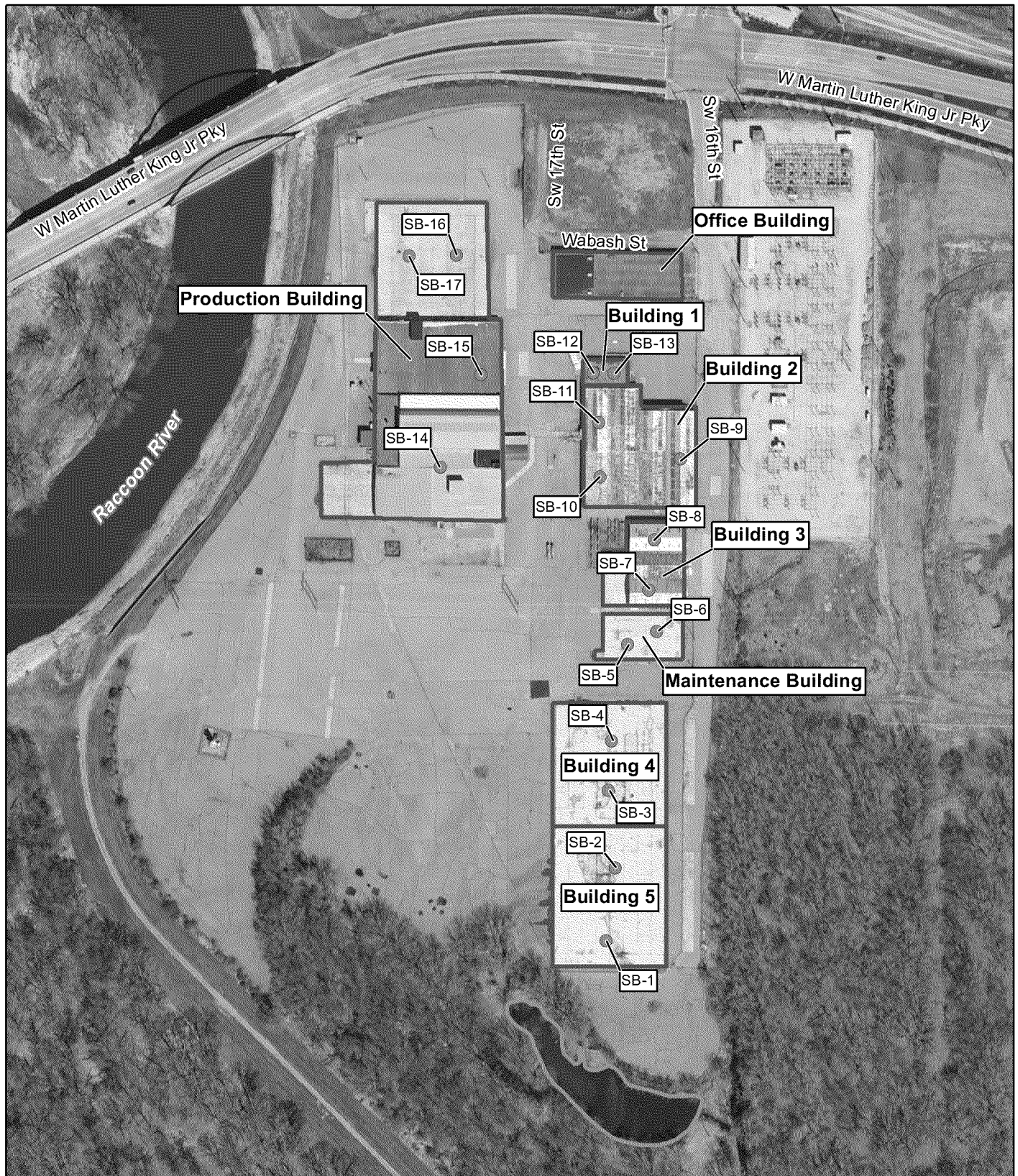


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Date: 9/29/2016

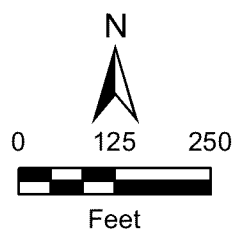
Drawn By: Nick Wiederholt

Project No: X9025.16.0144.000



Legend

- Concrete/sub-slab soil sample location
- ▭ Building location
- ▭ South pond location



Des Moines TCE Site
Des Moines, Iowa

Figure 5
Boring and Concrete
Sample Location Map



Source: ESRI, ArcGIS Online Maps, World Imagery, 2014; HSIP Gold, 2007

Date: 9/29/2016

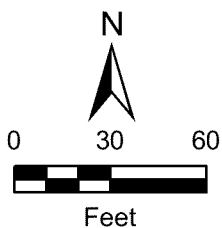
Drawn By: Nick Wiederholt

Project No: X9025.16.0144.000



Legend

- Sediment sample location
- ▲ Surface water sample location
- South pond location



Des Moines TCE Site
Des Moines, Iowa

Figure 6
Surface Water and Sediment
Sample Location Map



Source: ESRI, ArcGIS Online Maps, World Imagery, 2014

Date: 9/29/2016

Drawn By: Nick Wiederholt

Project No: X9025.16.0144.000

APPENDIX B

SAMPLE SUMMARY TABLES

TABLE 1
WIPE SAMPLE SUMMARY

Sample ID	EPA Sample ID	Surface	Location	Sample Date	Sample Time	Analysis
Building 3						
WS-1	7151-201	Brick	southwest wall	6/8/2016	1050	PCBs, Pesticides, Dioxin
WS-2	7151-202	I-Beam	southeast corner	6/8/2016	1100	PCBs, Pesticides, Dioxin
WS-3	7151-203	Concrete floor	north central	6/8/2016	1107	PCBs, Pesticides, Dioxin
WS-4	7151-204	Sheet metal	east side	6/8/2016	1115	PCBs, Pesticides, Dioxin
Building 2						
WS-5	7151-205	Concrete floor	east side	6/8/2016	1130	PCBs, Pesticides, Dioxin
WS-6	7151-206	Brick	north side	6/8/2016	1140	PCBs, Pesticides, Dioxin
WS-7	7151-207	I-Beam	central	6/8/2016	1150	PCBs, Pesticides, Dioxin
WS-8	7151-208	Sheet metal	southwest wall	6/8/2016	1155	PCBs, Pesticides, Dioxin
Building 1						
WS-9	7151-209	Concrete floor	central	6/8/2016	1620	PCBs, Pesticides, Dioxin
WS-10	7151-210	Brick	west wall	6/8/2016	1630	PCBs, Pesticides, Dioxin
WS-11	7151-211	Sheet metal	north wall	6/8/2016	1640	PCBs, Pesticides, Dioxin
WS-12	7151-212	Metal box	central	6/8/2016	1650	PCBs, Pesticides, Dioxin
Production Building						
WS-13	7151-213 / 7151-213FD	Concrete floor	north central	6/9/2016	1300	PCBs, Pesticides, Dioxin
WS-14	7151-214	Concrete floor	central	6/9/2016	1312	PCBs, Pesticides, Dioxin
WS-15	7151-215	Concrete floor	south central	6/9/2016	1324	PCBs, Pesticides, Dioxin
WS-16	7151-216	I-Beam	east central	6/9/2016	1355	PCBs, Pesticides, Dioxin
WS-17	7151-217	I-Beam	central	6/9/2016	1403	PCBs, Pesticides, Dioxin
WS-18	7151-218	I-Beam	northwest corner	6/9/2016	1409	PCBs, Pesticides, Dioxin
WS-19	7151-219 / 7151-219FD	Sheet metal	southeast corner	6/9/2016	1434	PCBs, Pesticides, Dioxin
WS-20	7151-220	Sheet metal	northeast corner	6/9/2016	1413	PCBs, Pesticides, Dioxin
WS-21	7151-221	Brick	east central	6/9/2016	1500	PCBs, Pesticides, Dioxin
WS-22	7151-222 / 7151-222FD	Brick	southwest corner	6/9/2016	1510	PCBs, Pesticides, Dioxin

Notes:

EPA U.S. Environmental Protection Agency
FD Field duplicate
ID Identification
PCB Polychlorinated biphenyl

TABLE 2

BUILDING MATERIALS SAMPLE SUMMARY

Sample ID	EPA Sample ID	Surface	Location	Sample Date	Sample Time	Analysis
Building 3						
BMS-1	7151-301	Brick	east wall	6/8/2016	1340	PCBs, Pesticides, Dioxin
BMS-2	7151-302	Insulation	south wall	6/8/2016	1410	PCBs, Pesticides, Dioxin
BMS-3	7151-303	Cinder block	southwest corner	6/8/2016	1420	PCBs, Pesticides, Dioxin
BMS-4	7151-304	White surface coating	east wall	6/8/2016	1432	PCBs, Pesticides, Dioxin
Building 2						
BMS-5	7151-305	Brick	east wall	6/8/2016	1450	PCBs, Pesticides, Dioxin
BMS-6	7151-306	Insulation	south wall	6/8/2016	1505	PCBs, Pesticides, Dioxin
BMS-7	7151-307	Cinder block	north wall	6/8/2016	1514	PCBs, Pesticides, Dioxin
BMS-8	7151-308	White surface coating	central	6/8/2016	1521	PCBs, Pesticides, Dioxin
BMS-9	7151-309	Drywall	north central room	6/8/2016	1528	PCBs, Pesticides, Dioxin
BMS-10	7151-310	Brick	central	6/8/2016	1545	PCBs, Pesticides, Dioxin
Building 1						
BMS-11	7151-311	Insulation	south wall	6/8/2016	1551	PCBs, Pesticides, Dioxin
BMS-12	7151-312	Drywall	east wall	6/8/2016	1559	PCBs, Pesticides, Dioxin
BMS-13	7151-313	White surface coating	west wall	6/8/2016	1606	PCBs, Pesticides, Dioxin
Production Building						
BMS-14	7151-314	Large brick material	northwest corner	6/9/2016	0758	PCBs, Pesticides, Dioxin
BMS-15	7151-315	Small brick material	west central	6/9/2016	0806	PCBs, Pesticides, Dioxin
BMS-16	7151-316	Cinder block	west wall	6/9/2016	0812	PCBs, Pesticides, Dioxin
BMS-17	7151-317	Insulation-Ceiling	north wall	6/9/2016	0818	PCBs, Pesticides, Dioxin
BMS-18	7151-318	Drywall	north wall	6/9/2016	0750	PCBs, Pesticides, Dioxin
BMS-19	7151-319	Pink insulation	north wall	6/9/2016	0830	PCBs, Pesticides, Dioxin
BMS-20	7151-320	Ridged brick material	central	6/9/2016	0842	PCBs, Pesticides, Dioxin
BMS-21	7151-321	White surface coating	central	6/9/2016	0845	PCBs, Pesticides, Dioxin
BMS-22	7151-322	Insulation	east wall	6/9/2016	0853	PCBs, Pesticides, Dioxin
BMS-23	7151-323	Interior wood wall	central	6/9/2016	0859	PCBs, Pesticides, Dioxin
BMS-24	7151-324	Wooden structure material	southeast corner	6/9/2016	0941	PCBs, Pesticides, Dioxin

Notes:

EPA U.S. Environmental Protection Agency
 FD Field duplicate
 ID Identification
 PCB Polychlorinated biphenyl

TABLE 3

CONCRETE SAMPLE SUMMARY

Sample ID	EPA Sample ID	Location	Sample Date	Sample Time	Analysis
Former Building 5					
SB-1 (0-2 ft bgs)	7151-340	south	6/8/2016	0830	PCBs, Pesticides, Dioxin
SB-2 (0-2 ft bgs)	7151-341	north	6/8/2016	0945	PCBs, Pesticides, Dioxin
Former Building 4					
SB-3 (0-2 ft bgs)	7151-342	south	6/8/2016	1040	PCBs, Pesticides, Dioxin
SB-4 (0-2 ft bgs)	7151-343	north	6/8/2016	1150	PCBs, Pesticides, Dioxin
Former Maintenance Building					
SB-5 (0-2 ft bgs)	7151-344	west	6/8/2016	1445	PCBs, Pesticides, Dioxin
SB-6 (0-2 ft bgs)	7151-345	east	6/8/2016	1525	PCBs, Pesticides, Dioxin
Building 3					
SB-7 (0-2 ft bgs)	7151-346	south	6/9/2016	0740	PCBs, Pesticides, Dioxin
SB-8 (0-2 ft bgs)	7151-347	north	6/9/2016	0900	PCBs, Pesticides, Dioxin
Building 2					
SB-9 (0-2 ft bgs)	7151-348	east	6/9/2016	1015	PCBs, Pesticides, Dioxin
SB-10 (0-2 ft bgs)	7151-349 / 7151-349FD	southwest	6/9/2016	1300	PCBs, Pesticides, Dioxin
SB-11 (0-2 ft bgs)	7151-350	northwest	6/9/2016	1350	PCBs, Pesticides, Dioxin
Building 1					
SB-12 (0-2 ft bgs)	7151-351	west	6/9/2016	1510	PCBs, Pesticides, Dioxin
SB-13 (0-2 ft bgs)	7151-352	east	6/9/2016	1615	PCBs, Pesticides, Dioxin
Production Building					
SB-14 (0-2 ft bgs)	7151-353	south	6/10/2016	0800	PCBs, Pesticides, Dioxin
SB-15 (0-2 ft bgs)	7151-354	east central	6/10/2016	0900	PCBs, Pesticides, Dioxin
SB-16 (0-2 ft bgs)	7151-355	northeast	6/10/2016	1015	PCBs, Pesticides, Dioxin
SB-17 (0-2 ft bgs)	7151-356	northwest	6/10/2016	1120	PCBs, Pesticides, Dioxin

Notes:

EPA	U.S. Environmental Protection Agency
FD	Field duplicate
ft bgs	Feet below ground surface
ID	Identification
PCB	Polychlorinated biphenyl

TABLE 4

SOIL SAMPLE SUMMARY

Sample ID	EPA Sample ID	Location	Sample Date	Sample Time	Analysis
Former Building 5					
SB-1 (0-2 ft bgs)	7151-11	south	6/8/2016	0830	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-1 (8-10 ft bgs)	7151-12		6/8/2016	0850	VOCs, PCBs, Pesticides, Herbicides
SB-1 (13-15 ft bgs)	7151-13		6/8/2016	0905	VOCs, PCBs, Pesticides, Herbicides
SB-1 (18-20 ft bgs)	7151-14		6/8/2016	0915	VOCs, PCBs, Pesticides, Herbicides
SB-2 (0-2 ft bgs)	7151-15	north	6/8/2016	0945	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-2 (8-10 ft bgs)	7151-16		6/8/2016	0950	VOCs, PCBs, Pesticides, Herbicides
SB-2 (13-15 ft bgs)	7151-17		6/8/2016	1000	VOCs, PCBs, Pesticides, Herbicides
SB-2 (18-20 ft bgs)	7151-18		6/8/2016	1010	VOCs, PCBs, Pesticides, Herbicides
Former Building 4					
SB-3 (0-2 ft bgs)	7151-19	south	6/8/2016	1040	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-3 (8-10 ft bgs)	7151-20		6/8/2016	1050	VOCs, PCBs, Pesticides, Herbicides
SB-3 (13-15 ft bgs)	7151-21		6/8/2016	1100	VOCs, PCBs, Pesticides, Herbicides
SB-3 (18-20 ft bgs)	7151-22		6/8/2016	1110	VOCs, PCBs, Pesticides, Herbicides
SB-4 (0-2 ft bgs)	7151-23	north	6/8/2016	1145	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-4 (8-10 ft bgs)	7151-24		6/8/2016	1200	VOCs, PCBs, Pesticides, Herbicides
SB-4 (13-15 ft bgs)	7151-25		6/8/2016	1210	VOCs, PCBs, Pesticides, Herbicides
SB-4 (18-20 ft bgs)	7151-26 / 7151-26FD		6/8/2016	1220	VOCs, PCBs, Pesticides, Herbicides
Former Maintenance Building					
SB-5 (0-2 ft bgs)	7151-27	west	6/8/2016	1415	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-5 (8-10 ft bgs)	7151-28		6/8/2016	1425	VOCs, PCBs, Pesticides, Herbicides
SB-5 (13-15 ft bgs)	7151-29		6/8/2016	1435	VOCs, PCBs, Pesticides, Herbicides
SB-5 (18-20 ft bgs)	7151-30		6/8/2016	1445	VOCs, PCBs, Pesticides, Herbicides
SB-6 (0-2 ft bgs)	7151-31	east	6/8/2016	1525	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-6 (8-10 ft bgs)	7151-32		6/8/2016	1535	VOCs, PCBs, Pesticides, Herbicides
SB-6 (13-15 ft bgs)	7151-33		6/8/2016	1545	VOCs
SB-6 (18-20 ft bgs)	7151-34		6/8/2016	1555	VOCs, PCBs, Pesticides, Herbicides
Building 3					
SB-7 (0-2 ft bgs)	7151-36 / 7151-36FD	south	6/9/2016	0740	VOCs, PCBs, Pesticides, Herbicides
SB-7 (8-10 ft bgs)	7151-37		6/9/2016	0750	VOCs, PCBs, Pesticides, Herbicides
SB-7 (13-15 ft bgs)	7151-38		6/9/2016	0800	VOCs, PCBs, Pesticides, Herbicides
SB-7 (18-20 ft bgs)	7151-39		6/9/2016	0810	VOCs, PCBs, Pesticides, Herbicides
SB-8 (0-2 ft bgs)	7151-40	north	6/9/2016	0900	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-8 (8-10 ft bgs)	7151-41		6/9/2016	0910	VOCs, PCBs, Pesticides, Herbicides
SB-8 (13-15 ft bgs)	7151-42		6/9/2016	0920	VOCs, PCBs, Pesticides, Herbicides
Building 2					
SB-9 (0-2 ft bgs)	7151-43	east	6/9/2016	1015	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-9 (8-10 ft bgs)	7151-44		6/9/2016	1025	VOCs, PCBs, Pesticides, Herbicides
SB-9 (13-15 ft bgs)	7151-45		6/9/2016	1035	VOCs, PCBs, Pesticides, Herbicides
Sample ID	EPA Sample ID	Location	Sample Date	Sample Time	Analysis
Former Building 5					
SB-10 (0-2 ft bgs)	7151-46	southwest	6/9/2016	1300	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-10 (8-10 ft bgs)	7151-47		6/9/2016	1310	VOCs, PCBs, Pesticides, Herbicides
SB-10 (13-15 ft bgs)	7151-48		6/9/2016	1320	VOCs, PCBs, Pesticides, Herbicides
SB-11 (0-2 ft bgs)	7151-49	northwest	6/9/2016	1350	VOCs, Pesticides
SB-11 (8-10 ft bgs)	7151-50		6/9/2016	1400	VOCs, PCBs, Pesticides, Herbicides
SB-11 (13-15 ft bgs)	7151-51		6/9/2016	1410	VOCs
SB-11 (18-20 ft bgs)	7151-52		6/9/2016	1420	VOCs, PCBs, Pesticides, Herbicides

TABLE 4 (Continued)

SOIL SAMPLE SUMMARY

Sample ID	EPA Sample ID	Location	Sample Date	Sample Time	Analysis
Building 1					
SB-12 (0-2 ft bgs)	7151-53	west	6/9/2016	1510	VOCs, Pesticides
SB-12 (8-10 ft bgs)	7151-54		6/9/2016	1520	VOCs, PCBs, Pesticides, Herbicides
SB-12 (13-15 ft bgs)	7151-56		6/9/2016	1530	VOCs, PCBs, Pesticides, Herbicides
SB-12 (18-20 ft bgs)	7151-57		6/9/2016	1540	VOCs, PCBs, Pesticides, Herbicides
SB-13 (0-2 ft bgs)	7151-58	east	6/9/2016	1615	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-13 (8-10 ft bgs)	7151-55		6/9/2016	1625	VOCs, PCBs, Pesticides, Herbicides
SB-13 (13-15 ft bgs)	7151-59		6/9/2016	1635	VOCs, PCBs, Pesticides, Herbicides
SB-13 (18-20 ft bgs)	7151-60		6/9/2016	1645	VOCs, PCBs, Pesticides, Herbicides
Production Building					
SB-14 (0-2 ft bgs)	7151-61	south	6/10/2016	0800	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-14 (8-10 ft bgs)	7151-62 / 7151-62FD		6/10/2016	0810	VOCs, PCBs, Pesticides, Herbicides
SB-14 (13-15 ft bgs)	7151-63		6/10/2016	0820	VOCs, PCBs, Pesticides, Herbicides
SB-15 (0-2 ft bgs)	7151-64	east central	6/10/2016	0900	VOCs, PCBs, Pesticides, Herbicides
SB-15 (8-10 ft bgs)	7151-65		6/10/2016	0910	VOCs, PCBs, Pesticides, Herbicides
SB-15 (13-15 ft bgs)	7151-66		6/10/2016	0920	VOCs, PCBs, Pesticides, Herbicides
SB-16 (0-2 ft bgs)	7151-67	northeast	6/10/2016	1015	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-16 (8-10 ft bgs)	7151-68		6/10/2016	1025	VOCs
SB-16 (13-15 ft bgs)	7151-69		6/10/2016	1035	VOCs
SB-16 (18-20 ft bgs)	7151-70		6/10/2016	1045	VOCs
SB-17 (0-2 ft bgs)	7151-71	northwest	6/10/2016	1120	VOCs, PCBs, Pesticides, Herbicides, Dioxin
SB-17 (8-10 ft bgs)	7151-72 / 7151-72FD		6/10/2016	1130	VOCs, PCBs, Pesticides, Herbicides
SB-17 (13-15 ft bgs)	7151-73 / 7151-73FD		6/10/2016	1140	VOCs, PCBs, Pesticides, Herbicides
SB-17 (15-18 ft bgs)	7151-74		6/10/2016	1150	VOCs, PCBs, Pesticides, Herbicides

Notes:

EPA	U.S. Environmental Protection Agency
FD	Field duplicate
ft bgs	Feet below ground surface
ID	Identification
PCB	Polychlorinated biphenyl
VOC	Volatile organic compound

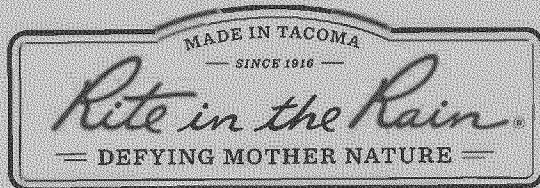
TABLE 5**SURFACE WATER/SEDIMENT SAMPLE SUMMARY**

Sample ID	EPA Sample ID	Sample Date	Sample Time	Analysis
Sediment Samples				
SD-1	7151-1	6/6/2016	1620	VOCs, PCBs, Pesticides, Herbicides
SD-2	7151-2 / 7151-2FD	6/6/2016	1640	VOCs, PCBs, Pesticides, Herbicides
SD-3	7151-3	6/6/2016	1745	VOCs, PCBs, Pesticides, Herbicides
SD-4	7151-4	6/6/2016	1830	VOCs, PCBs, Pesticides, Herbicides
SD-5	7151-5	6/7/2016	0800	VOCs, PCBs, Pesticides, Herbicides
SD-6	7151-6	6/7/2016	0810	VOCs, PCBs, Pesticides, Herbicides
SD-7	7151-7	6/7/2016	0830	VOCs, PCBs, Pesticides, Herbicides
SD-8	7151-8	6/7/2016	0900	VOCs, PCBs, Pesticides, Herbicides
SD-9	7151-9	6/7/2016	0920	VOCs, PCBs, Pesticides, Herbicides
SD-10	7151-10	6/7/2016	0940	VOCs, PCBs, Pesticides, Herbicides
Surface Water Samples				
SW-1	7151-401 / 7151-401FD	6/7/2016	1400	VOCs, PCBs, Pesticides, Herbicides
SW-2	7151-402	6/7/2016	1430	VOCs, PCBs, Pesticides, Herbicides

Notes:

EPA U.S. Environmental Protection Agency
 FD Field duplicate
 ID Identification
 PCB Polychlorinated biphenyl
 VOC Volatile organic compound

APPENDIX C
FIELD LOGBOOKS



Name Des Moines TCE Site
1698 Wabash St.

Address Des Moines, IA 50309

Phone _____

Project _____



RiteintheRain.com

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REFERENCE

DATE

START Program Manager

Ted Faile

START Project Manager

Mike Williams

EPA Project Manager

Erin McCoy

START Team Members

Adam Watkins

Shane Strope

Christin Russell

GUARD SHACK PHONE: 515-803

-4425

6-6-2016

1200 ADAM WATKINS (T) & SHANE STROPE (T)
ARRIVE @ 1698 WABASH ST. IN DES MOINES,
IOWA (SITE). BRIAN MILLS & GABE GEORGE
(TITAN) ARE ON SITE.

1213 ERIN MCCOY (EPA PM) ARRIVES ONSITE.

1230 TITAN REPRESENTATIVES SHOW STAGT
MEMBERS A SECURE LOCATION TO STORE
SAMPLING EQUIPMENT/SUPPLIES.

1300 ALL PARTIES PERFORM A SITE WALK OF THE
FACILITY & START MARKS OPT LOCATIONS
W/ PAINT.

1430 WATKINS & STROPE DEPART SITE TO RUN
OVER THE HOSPITAL ROUTE & GRAB SUPPLIES.

1245
NOTE: WATKINS CONDUCTED A DAILY TAILGATE
MEETING & HAD EVERYONE SIGN THE
SITE NASP.

1530 WATKINS & STROPE ONSITE. PREP TO
COLLECT SEDIMENT SAMPLES AROUND THE SOUTH
POND AREA.

1620 7151-1 Sed Sample

1640 7151-2 Sed Sample

1745 COLLECT 7151-3. SEDIMENT SAMPLE.

1830 COLLECT 7151-4. SEDIMENT SAMPLE.
1840

6-6-2016

1850 WATKINS & STROPE RETURN TO THE SITE
STAGING AREA & UNLOAD VEHICLE.

1915 TEAM DEPARTS SITE.

1940 TEAM ARRIVES @ HOTEL. END OF DAY.

6-6-2016

[Handwritten signature]

Rite in the Rain

6-7-16

0653 WATKINS & STROPE ARRIVE @ THE SITE,
MCCOY & TITAN REPS ALREADY ONSITE.

START MOVES TO STAGING AREA TO PREP
FOR SAMPLING SEDIMENT IN THE SOUTH
POND AREA.

0715 START ARRIVES IN THE SOUTH POND AREA
& FINDS A SLEEPING HOMELESS MAN ^{10'}
NEARBY. STROPE CALLS SECURITY WHO RUNS
THE HOMELESS MAN AWAY FROM THE SITE,
& CALLS THE POLICE.

0720 WATKINS CONDUCTS A MORNING SAFETY
TAILGATE MEETING. TOPICS INCLUDE
BITING INSECTS, SECURITY, & WINDY
CONDITIONS.

0740 WATKINS & STROPE BEGIN ^{SEDIMENT} SAMPLING
ACTIVITIES.

0800 COLLECT 7151-⁵~~4~~^{7th}. SEDIMENT SAMPLING.

0810 COLLECT 7151-6. SEDIMENT SAMPLE.

0830 COLLECT 7151-7. SEDIMENT SAMPLE.

0900 COLLECT 7151-8. SEDIMENT SAMPLE.

0920 COLLECT 7151-9. SEDIMENT SAMPLE.

0940 COLLECT 7151-10. SEDIMENT SAMPLE.

1000 RETURN TO STAGING AREA TO STORE
SEDIMENT SAMPLE & WAIT FOR THE

6-7-16

PRIVATE UTILITY LOCATORS TO ARRIVE
ONSITE.

1118 PRIVATE UTILITY LOCATOR, RICK
NORLAND (CCS) ARRIVES ONSITE.
HE SIGNS THE HAZO.

1130 START UTILITY LOCATING ACTIVITIES.

1250 RICK NORLAND FINISHES UTILITY
LOCATING ACTIVITIES. ALL DPT LOCATION
HAVE BEEN CLEARED. NORLAND DEPARTS
SITE. CHRISTIN RUSSELL (TT)

ARRIVES ONSITE. SHE SIGNS THE HAZO.

1300 START PREPS TO COLLECT SURFACE
WATER SAMPLES IN THE SOUTH POND
AREA.

1400 COLLECT 7151-401-FB
7151-401. SURFACE WATER
SAMPLES.

1430 COLLECT 7151-402. SURFACE WATER
SAMPLE.

1510 RETURN TO SITE STAGING AREA.

1640 COLLECT 7151-407-FB. FIELD BLANK
SAMPLE.

1641 Depart site. Travel to hotel to
package samples.

1800 Depart hotel. Travel to FedEx.

Rite in the Rain

6-7-16

1900 Depart Fed Ex. End field work.

6-7-16
C. Russell

6-8-16

- 0700 Arrive on site. Meet with Plains, Erin (EPA), and Titan representative. Watkins conducts safety tailgate. Topics include hearing and vision protection, slips trips & fall & site security.
- 0745 Arrive at building 5. Watkins and Russell assist with Geoprobe activities.
- 1000 Arrive at building 3, prep for wipe samples.
- 1030 IDNR arrives on site.
- 1050 Collect sample 7151-201, brick
- 1100 collect sample 7151-202, I-beam, SE corner
- 1107 Collect sample 7151-203, concrete floor, north central
- 1115 Collect sample 7151-20^{3/4}₁, sheet metal, East side
- 1125 Arrive at Building 2
- 1130 Collect sample 7151-20⁵₁, concrete floor, East side
- 1140 Collect sample 7151-206

Rite in the Rain

6-8-16

- north side of building, brick
- 1150 Collect sample ⁷¹⁵¹ 207, I-beam
Central part of building
- 1155 Collect sample 7151-208,
coated sheet metal, SW wall
- 1210 Arrive at Geoprobe to assist
with activities.
- 1230 Depart site for lunch break.
Purchase field supplies (ice).
- 1320 Arrive on site. Prep for
building materials sampling.
Arrive at building 3
- 1340 Collect sample 7151-301, brick
center of east wall
- 1410 Collect sample 7151-302,
insulation, center of south wall
- 1420 Collect sample 7151-303,
cinder block, SW corner
- 1432 Collect sample 7151-304,
white surface coating, center
of east wall.
- Arrive at building 2
- 1450 Collect sample 7151-305, brick,
center of east wall

6-8-16

- 1505 Collect sample 7151-306,
insulation, center of south wall
- 1514 Collect sample 7151-307,
cinder block, center of north wall
- 1521 Collect sample 7151-308,
white surface coating, center of building
- 1528 Collect sample 7151-309,
dry wall furthest northeast
corner, central room.
- 1545 Collect sample 7151-310,
brick, south wall.
- 1551 Collect sample 7151-311,
insulation, center of building.
- 1559 Collect sample 7151-312,
dry wall, east wall.
- 1606 Collect sample 7151-313,
white surface coating, west wall
- 1620 Collect sample 7151-209,
concrete floor, center of building
- 1630 Collect sample 7151-210,
brick wall, ^{WEST} SOUTH WALL
- 1640 Collect sample 7151-211,
^{SHEET} METAL, NORTH WALL
- 1650 Collect sample 7151-212
METAL BOX. CENTER OF BUILDING *full in the rain*

6-8-16

- 1730 Depart site. Break for dinner
 1830 Watkins, Strope, + Russell prep
 samples at hotel, for shipment.
 0030 End Field activities.

6-8-16
 C. Kujala II

6-9-16

- 0700 Arrive on site. Morning
 meeting with EPA, Titan,
 + Plains. Watkins conducts
 safety tailgate meeting.
 Topics include Geoprobe
 activities, heat, eye + hearing
 protection, respiratory protection
 0745 Arrive at Production Building
 0750 Collect sample 7151-318,
 dry wall, center of north wall
 0758 Collect sample 7151-319,
 large brick, northwest corner
 0806 Collect sample 7151-315,
 small brick, west central building
 0812 Collect sample 7151-316,
 cinder block, west wall
 0818 Collect sample 7151-317,
 insulation, yellow, north wall-ceiling
 0830 Collect sample 7151-318,
 pink insulation, center of north wall
 0842 Collect sample 7151-320,
 ridged brick, center of building
 0845 Collect sample 7151-321,
 white surface coating, center of bldg

Rite in the Rain.

6-9-16

- 0853 Collect sample 7151-322, interior insulation, central eastern wall
- 0859 Collect sample 7151-323, wood wall, center of building
- 0941 Collect sample 7151-324, wood wall, SE wooden building
- Depart site. Travel to hotel
- 1120 to pick up sampling supplies. Lunch break.
- 1215 Arrive on site. Arrive at Production Building G
- 1300 Collect sample 7151-213, dup. concrete north central part of building
- 1312 Collect sample 7151-214, concrete, center of building
- 1324 Collect sample 7151-215, concrete, south central part of building
- 1355 Collect sample 7151-216, I-beam central-eastern part of building
- 1403 Collect sample 7151-217, I-beam center of building
- 1409 Collect sample 7151-218, I-beam, northwest corner
- 1434 Collect sample 7151-219, dup

6-9-16

- Sheet metal, SE corner
- 1413 Collect sample 7151-220, sheet metal, SE corner ^{or} NW corner
- 1500 Collect sample 7151-221, brick central-eastern part of building
- 1510 Collect samples 7151-222 and 7151-222-FD, brick, SW corner
- 1530 Begin prepping samples for PACE shipment (Dioxin)
- 1615 Depart site to purchase field supplies.
- 1630 Return to site, complete sample preparation.
- 1900 Depart site. Travel to FedEx to ship samples
- 2000 Arrive at hotel. Break for dinner.
- 2100 Begin sample prep for EPA delivery
- 0030 End Field Activities

6-9-16
C. Russell

Rite in the Rain

6-10-16

0703 WATKINS & STROPE ARRIVE @ THE
SITE. WATKINS CONDUCTS A MORNING
SAFETY TAILGATE MEETING. TOPICS
INCLUDE SLIPS, TRIPS, & FALLS, PRODUCTION,
BUILDING HAZARDS, & HEAT EXHAUSTION.
ATTENDERS INCLUDE MCCOY (EPA), BRIAN
MILLS & GABRIEL GEORGE (TITAN), & HENRY
(PLAINS).

0715 MOVE TO SOUTH DPT SAMPLE LOCATION
& PAEP TO BEGINS DPT SAMPLING ACTIVITIES.
DPT SAMPLING ACTIVITIES BEING DOCUMENT-
ED W/ LOG BOOK 2.

1300 COLLECT FB-1. FIELD BLANK
SAMPLE (DIOXIN).

1310 COLLECT RB⁷¹⁵¹⁻⁴⁰⁴.
RINSATE BLANK SAMPLE.

1320 LOAD SUPPLIES/EQUIPMENT INTO VEHICLE.

1340 DEPART SITE.

Rite in the Rain



Name Des Moines TCE Site
1698 Wabash St.

Address Des Moines, IA 50309

Phone _____

Project _____



RiteintheRain.com

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	START Project Manager	
	Mike Williams	
	EPA Project Manager	
	Erin McCoy	
	START Team Members	
	Adam Watkins	
	Shane Stropp	
	Christin Russell	

Des Moines TCE

6-8-16

Soil Borings

(0800) Henry Walker from Plains Env on site to perform PPT sampling.
 EPA Erin McCoy - on site
 Titan reps on site. Gazi George & Brian Mills
 Adam Watkins & Christin Russell on site
 Shane Strope on site to perform
 Soil Logging & Sampling.

(0810) SB-1 South end of former Bldg 5.

[Using PID Multi-Rae Pro (PM6-6284)
 ppb rae to run PID on soils.

No observed impacts, slight saturation
 @ 13' bgs. Terminated Boring @ 25' bgs
 No refusal encountered.

(0945) SB-2 North end of former Bldg 5. No observed impacts slight saturation @ 14-16' bgs Terminated Boring @ 20' bgs

6-8-16

SB-3 (1040) South end of former Bldg 4
 no observed impacts. Saturated from 13-16' bgs. Terminated boring @ 20' bgs no refusal encountered.

SB-4 (1150) North end of former Bldg 4
 no observed impacts. no observed GW
 Terminated boring @ 20' bgs. Collected ms/msd @ 0-2 bgs. Collected Pup @ 18-20' bgs.

1305-1345 Lunch

(1400) SB-5 West side of former maintenance Bldg. No observed impacts but encountered potential building materials @ 6-10' bgs encountered slightly saturated clays @ 10-13' bgs. Saturated ~~clays~~ soils (sands) @ 18-20' bgs.

1520 SB-6 East side of former Bldg maintenance bldg. No observed impacts encountered potential building materials @ 8-10' red brick clast. coarse gravel & concrete clast. 10-15 % recovery Limited sample volume collected VOCs only

Not in the room

Des Moines TCE 6-8-16

SB-6 cont.

15-20' bgs Fully Saturated Sands
collected saturated sample from
18-20' bgs.

Collected 4 soil samples from each
boring every 5' ~~later~~ in 2' sample
intervals. Collected concrete
Samples at each boring location &
collected Dioxin samples at each
boring location from Surface Soils
0-2' bgs. Took Site pics & Boring
Location Pic's. Soil cuttings were
placed back into borings per QAPP
and EPA (Erin McCoy) approval.
Borings further back filled w/ Hydrated
bentonite chips and patched at
surface w/ concrete.
all samples in coolers on ice
Sampling equipment deconed w/ Alconox
& potable water rinse.

1720 off site

JS

Des Moines TCE 6-9-16

0710 Arrive on-site

continue w/ soil borings @ SB-7
in south portion of Bldg 3
Calibrated PID w/ Isobutylene Gas
@ 100 ppb & Fresh air @ 0.0 ppb
held tailgate meeting.

Plains - DPT

Shane Strope - Geologist

Erin McCoy - EPA

Adam Watkins & Christin Russell
continuing wipe & materials sampling
Representative from Titan (Brian Mills &
Gazi George) on-site

0730 SB-7 South end of Bldg 3
no observed impacts, GW @ 14-20' bgs
in alluvial sands. Did not collect
Dioxin sample (soil 0-2) forgot to
pack Jar, Erin McCoy said it was
no problem we have many dioxin
samples to compensate.

0850 SB-8 North end of Bldg 3

Rite in the Rain

6 Des Moines TCE 6-9-16

SB-8 cont... No observed impacts observed potential building materials red brick cleft, Gravel, wood splinters etc. G.W. @ 18-20 in alluvial sands No sample collected in saturated interval from 18-20' per Erin McCoy. does not want to submit saturated soils from remaining borings.

1010 SB-9 encountered refusal on potential concrete or bldg materials @ 6' bgs off set boring & advanced to 20' bgs No observed impacts but encountered fill material consisting of potential building materials (subsurface) G.W. observed @ 15' bgs. No sample collected from 18-20' bgs.

1250 SB-10 No observed impacts but did encounter buried building materials (red brick, concrete, coarse sand & Gravel). G.W. @ 18-20' bgs

7 6-9-16

SB-10 cont...

Alluvial sands from 19-20' bgs (Wet)
No sample collected from 18-20' bgs

1340 SB-11 observed impacts from 10-20' bgs Black fill sand & clays Strong odors (not sure if petroleum or solvent), Battery on PID is Dead unable to get field screen reading. Erin McCoy is aware. Collected impacted samples from 13-15' bgs & 18-20' bgs. Limited recovery from 0-2' bgs No Herb collected via Erin McCoy approval 13-15' bgs Limited recovery collected VOC's only. Erin McCoy approved & over sight of all ^{SS} sampling activities.

1500 SB-12 observed impacts from 10-20' bgs. Collected samples 13-15 & 18-20 w/ observed impacts Erin McCoy present & observed impacted materials. in Former Boiler Room

Rite in the Rain.

Des Moines TCE 6-9-16

1610 SB-13 South side of Boiler Room (Bldg 1) observed impacts from 10-15' bgs appears ~~to be clean~~^{ss} to be clean from 15-20'. 15-20' is Saturated Alluvial sands but collected saturated sample from 18-20' bgs to confirm impacts end @ 15' bgs.

⊗ All soil samples in cooler on ice. Soil borings back filled w/ soil cuttings & Hydrated bentonite & finished at surface w/ concrete patch. Deconed w/ Olconox & potable water rinse. Took site photos of boring locations soil cores & activities

1730 Plains & Erin McCoy off-site. STM continued to prep samples for delivery to Pace Lab

1900 STM off site

Des Moines TCE 6-10-16

0700 Arrive on Site

Erin McCoy - EPA osc; Henry ^{D-PT} Plains Env
Adam Watkins - Tetra Tech
Shane Stroup - Tetra Tech
Brian Mills - Titen Inc.
on-site. Review HASP perform
Tail gate meeting.
Calibrated PID w/ Isobutylene gas @ 10 ppb & Fresh air @ 0.0 ppb PID has full charge. (ppb range).

0750 SB-14 South production Bldg
10 observed, impacts observed G.W.
⊗ 10' bgs did not collect sample below 15' bgs ^(water) per Erin McCoy. Boring Terminated @ 15' bgs.

0850 SB-15 Central/East portion of Production Bldg. No observed impacts. observed G.W. @ 10' bgs Terminated boring @ 15' bgs per Erin McCoy (osc).

Rite in the Rain

Des Moines TCE 6-10-16

1000 SB-16 North East portion of Production Bldg. observed subsurface concrete layer @ 5' bgs. recovery below concrete sub base is very limited collected VOC's only from 8-10'; 13-15'; & 18-20' bgs. No observed impacts, no observed G.W.

1100 SB-17 North West Portion of Production Bldg. No observed impacts observed G.W. @ 15' bgs collected saturated sample from 15-18' bgs per Erin McCoy (OSC).

Collected Equipment rinseate from geoprob drilling shoe using Lab-prepared Deionized water.

Samples collected included 3-4 soil samples from each boring per OSC discretion Concrete (dust) samples were collected from each boring location.

6-10-16

Dioxin Soil samples were collected from Surface Soil samples at each Location (except SB-7) forgot to jar this sample, approved by OSC.

Concrete samples were Submitted for PCB's, Pesticides & Dioxin

Dioxin Samples were analyzed by Pace Analytical in Minneapolis, MN Soil & Concrete samples were submitted to the EPA Lab in Kansas City, KS

Sample Count:

Soil Samples = 24⁵³ 63

Soil Duplicate = 5

Sediment Sample = 10

Concrete Samples = 17

Dioxin Samples = 16

observed impacts is SB-11 & SB-12 & SB-13 located in North portion & Boiler Room at Bldgs 2 & Bldg 1 No observed impacts in remaining borings

Rite in the Rain.

Des Moines TCE 6-10-16

Boring Coordinates

SB-1 41.577304 SB-11 41.579879
- 93.638158 - 93.638233

SB-2 41.577666 SB-12 41.580145
- 93.638101 - 93.638156

SB-3 41.758051 SB-13 41.580078
- 93.638150 - 93.638114

SB-4 41.578295 SB-14 41.579471
- 93.638131 - 93.639275

SB-5 41.578776 SB-15 41.579795
- 93.638028 - 93.639046

SB-6 41.578842 SB-16 41.580706
- 93.637835 - 93.639149

SB-7 41.579048 SB-17 41.580700
- 93.637890 - 93.639496


SB-8 41.579298
- 93.637860


SB-9 41.579701
- 93.637687


SB-10 41.579610
- 93.638221


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APPENDIX D
BORING LOGS

Boring Log						
Site Name: Des Moines TCE		Boring Number: SB-1		Drilling Date: 6/8/2016		
Project Number: 103X9025.16.0144		Boring Depth: 25'				
Drilling Method: DPT		Depth to Water: None				
Drilling Company: Plains Env.		Geologist: Shane Strobe				
Site Elevation: 806' amsl		Weather: Sunny, nice 85° F				
Boring Coordinates: 41.577304, -93.638158		General boring Location: South portion of former building #5				
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description	
5 ft	60%	0.0	SB-1 (0-2)	7151-11	0-6" Concrete with gravel subgrade	
					6"-1' Water directly below concrete slab, fine-grained fill sand, light brown, wet, well sorted.	
		0.0				
10 ft	97%	0.0		7151-12	1'-8' Silty clay, dark grey moist, stiff, medium plasticity.	
		0.0	SB-1 (8-10)			
15 ft	80%	0.0		7151-13	8'-13' Silty clay, light brown, with trace grey mottling and iron oxide streaking, moist, stiff, medium plasticity.	
		0.0	SB-1 (13-15)		13'-14' Same as above, slightly saturated, soft, high plasticity.	
20 ft	67%			7151-14		
		0.0				
			SB-1 (18-20)		15'-25' Same as above, slightly saturated, soft, high plasticity.	
25 ft	70%	0.0				
		0.0			Boring terminated at 25' bgs. Refusal not encountered	


Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-2		Drilling Date: 6/8/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: None			
Drilling Company: Plains Env.		Geologist: Shane Strobe			
Site Elevation: 806' amsl		Weather: Sunny, nice 85° F			
Boring Coordinates: 41.577666, -93.638101		General boring Location: North portion of former building #5			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	83%	0.0	SB-2 (0-2)	7151-15	0-6" Concrete with gravel subgrade
		0.0			6"-1' Fine-grained fill sand, wet, light brown, well sorted.
10 ft	87%	0.0	SB-2 (8-10)	7151-16	1'-14' Silty clay, dark grey, moist, stiff, medium plasticity.
		0.0			
15 ft	93%	0.0	SB-2 (13-15)	7151-17	14'-16' Clayey silt, dark grey, slightly saturated, soft, high plasticity.
		0.0			
20 ft	67%	0.0	SB-2 (18-20)	7151-18	16'-20' Silty clay, dark grey, moist, stiff, medium plasticity.
		0.0			Boring terminated at 20' bgs. Refusal not encountered


Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-3		Drilling Date: 6/8/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 13' bgs			
Drilling Company: Plains Env.		Geologist: Shane Strobe			
Site Elevation: 806' amsl		Weather: Sunny, nice 85° F			
Boring Coordinates: 41.578051, -93.638150		General boring Location: South portion of former building #4			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	88%	0.0	SB-3 (0-2)	7151-19	0-6" Concrete with gravel subgrade
					6"-1' Fine-grained fill sand, light brown, moist, well sorted.
		0.0			
10 ft	93%	0.0		7151-20	1'-13' Silty clay, dark grey, with trace grey mottling and iron oxide streaking, trace fine sands throughout (< 5%), moist, stiff, medium plasticity.
		0.0	SB-3 (8-10)		
15 ft	87%	0.0		7151-21	13'-16' Wet sandy clay, dark brown, approximately 75% coarse-grained sand, poorly sorted, loose.
		0.0	SB-3 (13-15)		
20 ft	60%	0.0		7151-22	16'-20' Silty clay, dark grey, trace grey mottling, moist, stiff, medium plasticity.
		0.0	SB-3 (18-20)		Boring terminated at 20' bgs. Refusal not encountered


<div>Boring Log</div> <div></div>					
Site Name: Des Moines TCE		Boring Number: SB-4		Drilling Date: 6/8/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: None			
Drilling Company: Plains Env.		Geologist: Shane Strobe			
Site Elevation: 806' amsl		Weather: Sunny, nice 85° F			
Boring Coordinates: 41.578295, -93.638131		General boring Location: North portion of former building #4			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	63%	0.0	SB-4 (0-2)	7151-23	0-6" Concrete with gravel subgrade
		0.0			6"-7" Fine-grained fill sand, light brown, dry, loose, well sorted.
10 ft	70%	0.0	SB-4 (8-10)	7151-24	7"-20' Silty clay, dark grey, with trace grey mottling and iron oxide streaking, moist, stiff, medium plasticity.
		0.0			
15 ft	83%	0.0	SB-4 (13-15)	7151-25	
		0.0			
20 ft	87%	0.0	SB-4 (18-20)	7151-26 7151-26FD	
		0.0			
					Boring terminated at 20' bgs. Refusal not encountered

Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-5		Drilling Date: 6/8/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: None			
Drilling Company: Plains Env.		Geologist: Shane Strope			
Site Elevation: 806' amsl		Weather: Sunny, nice 85° F			
Boring Coordinates: 41.578776, -93.638028		General boring Location: West portion of former maintenance building			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	60%	0.0	SB-5 (0-2)	7151-27	0-6" Concrete with gravel subgrade
					6"-7" Fine-grained fill sand, light brown, dry, loose, well sorted.
		0.0			7"-2' Silty clay, light brown, trace iron oxide streaking, moist, stiff, medium plasticity
					2'-3' Same as above, slightly saturated clay dense with pieces of charcoal, light brown with iron oxide streaking, soft, high plasticity.
10 ft	53%	0.0		7151-28	3'-6' Silty clay, dark grey, trace grey mottling and iron oxide streaking, moist, stiff, medium plasticity.
		0.0	SB-5 (8-10)		6'-10' Silty clay, dark grey, trace greenish grey staining, intermixed with red brick clast and fines and black cinder material from approximately 8.5-9' bgs, moist, stiff, medium plasticity.
15 ft	73%	0.0		7151-29	10'-13' Silty clay, dark grey, moist, stiff, medium plasticity.
		0.0	SB-5 (13-15)		13'-14' Same as above, slightly saturated, soft, high plasticity.
					14'-18' Silty clay, dark grey, moist, stiff, medium plasticity.
20 ft	77%	0.0		7151-30	18'-20' Same as above, wet, coarse-grained sand and gravels from approximately 19.5-20' bgs, poorly sorted.
		0.0	SB-5 (18-20)		Boring terminated at 20' bgs. Refusal not encountered

Boring Log					
Site Name: Des Moines TCE			Boring Number: SB-6		Drilling Date: 6/8/2016
Project Number: 103X9025.16.0144			Boring Depth: 20'		
Drilling Method: DPT			Depth to Water: Observed while drilling at approximately 15' bgs		
Drilling Company: Plains Env.			Geologist: Shane Strope		
Site Elevation: 806' amsl			Weather: Sunny, nice 85° F		
Boring Coordinates: 41.578842, -93.637835			General boring Location: East portion of former maintenance building		
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	38%	0.0	SB-6 (0-2)	7151-31	0-6" Concrete with gravel subgrade
					6"-1' Fine-grained fill sand, light brown, moist, well sorted.
		0.0			1'-8' Silty clay, light brown, trace grey mottling, moist, stiff, medium plasticity.
10 ft	70%	0.0		7151-32	
		0.0	SB-6 (8-10)		8'-10' Silty clay, dark brown, intermixed with red brick clast and fines with coarse gravels and sands, trace grey mottling and iron oxide streaking, moist, stiff, medium plasticity.
15 ft	8%	0.0		7151-33	
		0.0	SB-6 (13-15)		10'-15' Red brick clast and fines, limited recovery.
20 ft	43%	0.0		7151-34	15'-20' Wet, coarse-grained sand (100%), light brown, poorly sorted, loose.
		0.0	SB-6 (18-20)		Boring terminated at 20' bgs. Refusal not encountered

Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-7		Drilling Date: 6/9/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 10' bgs			
Drilling Company: Plains Env.		Geologist: Shane Strope			
Site Elevation: 806' amsl		Weather: Sunny, hot 95° F			
Boring Coordinates: 41.579048, -93.637890		General boring Location: South portion of building #3			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	67%	0.0	SB-7 (0-2)	7151-36 7151-36FD	0-6" Concrete with gravel subgrade
		0.0			6"-9' Silty clay, dark brown, intermixed with red brick clast and fines with coarse gravels and sands, moist, stiff, medium plasticity. 9'-10' Silty clay, dark grey, moist, stiff, medium plasticity. 10'-14' Wet, same as above. 14'-20' Wet, coarse-grained sand (100%), light brown, poorly sorted, loose. Boring terminated at 20' bgs. Refusal not encountered
10 ft	82%	0.0	SB-7 (8-10)	7151-37	
		0.0			
15 ft	60%	0.0	SB-7 (13-15)	7151-38	
		0.0			
20 ft	40%	0.0	SB-7 (18-20)	7151-39	
		0.0			

Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-8		Drilling Date: 6/9/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 18' bgs			
Drilling Company: Plains Env.		Geologist: Shane Strope			
Site Elevation: 806' amsl		Weather: Sunny, hot 95° F			
Boring Coordinates: 41.579298, -93.637860		General boring Location: North portion of building #3			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	58%	0.0	SB-8 (0-2)	7151-40	0-6" Concrete with gravel subgrade
		0.0			6"-7' Silty clay, light brown, with trace iron oxide streaking and trace fine-grained sands to approximately 1'bgs, moist, stiff, medium plasticity.
10 ft	83%	0.0	SB-8 (8-10)	7151-41	7'-10' Silty clay, dark grey, intermixed with red brick clast and wood splinters, moist, stiff, medium plasticity.
		0.0			
15 ft	93%	0.0	SB-8 (13-15)	7151-42	10'-18' Silty clay, dark grey, slightly saturated, soft, high plasticity.
		0.0			
20 ft	72%	0.0			18'-20' Wet, coarse-grained sand (100%), light brown, poorly sorted, loose.
		0.0			Boring terminated at 20' bgs. Refusal not encountered

Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-9		Drilling Date: 6/9/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 15' bgs			
Drilling Company: Plains Env.		Geologist: Shane Strobe			
Site Elevation: 806' amsl		Weather: Sunny, hot 95° F			
Boring Coordinates: 41.579701, -93.637687		General boring Location: East portion of building #2			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	85%	0.0	SB-9 (0-2)	7151-43	0-6" Concrete with gravel subgrade
		0.0			6"-2' Silty clay, light brown, with trace iron oxide streaking, moist, stiff, medium plasticity.
					2'-5' Silty clay, dark brown, intermixed with red brick clast and fines with coarse gravels and sands, charcoal and black cinders, moist, stiff, medium plasticity.
10 ft	77%	0.0	SB-9 (8-10)	7151-44	5'-13' Silty clay, dark brown, intermixed with black cinders, coarse gravels and sands, trace grey mottling, moist, stiff, medium plasticity.
		0.0			
15 ft	87%	0.0	SB-9 (13-15)	7151-45	13'-15' Silty clay, dark grey, slightly saturated, soft, high plasticity.
		0.0			
20 ft	67%	0.0			15'-18' Wet silty clay, light brown.
		0.0			18'-20' Wet, coarse-grained sand (100%), light brown, poorly sorted, loose.
					Boring terminated at 20' bgs. Refusal encountered at 6 ' bgs on concrete (possible building material), boring was offset

Boring Log



Site Name: Des Moines TCE			Boring Number: SB-10		Drilling Date: 6/9/2016	
Project Number: 103X9025.16.0144			Boring Depth: 20'			
Drilling Method: DPT			Depth to Water: Observed while drilling at approximately 18' bgs			
Drilling Company: Plains Env.			Geologist: Shane Strope			
Site Elevation: 806' amsl			Weather: Sunny, hot 95° F			
Boring Coordinates: 41.579610, -93.638221			General boring Location: Southwest portion of building #2			
Depth (ft)	% Recovery	P ID (ppb)	External Sample ID	EPA Sample ID	Description	
5 ft	58%	0.0	SB-10 (0-2)	7151-46	0-6" Concrete with gravel subgrade	
		0.0			6"-10' Silty clay, dark brown, intermixed with red brick clast and fines with coarse gravels and sands, concrete, moist, stiff, medium plasticity.	
10 ft	63%	0.0	SB-10 (8-10)	7151-47		
		0.0				
15 ft	60%	0.0	SB-10 (13-15)	7151-48	10'-18' Silty clay, dark grey, trace grey mottling, moist, stiff, medium plasticity.	
		0.0				
20 ft	63%	0.0			18'-19' Wet silty clay, dark grey, soft, high plasticity.	
		0.0			19'-20' Wet, coarse-grained sand (100%), light brown, poorly sorted, loose.	
					Boring terminated at 20' bgs. Refusal not encountered	

Boring Log



Site Name: Des Moines TCE	Boring Number: SB-11	Drilling Date: 6/9/2016
Project Number: 103X9025.16.0144	Boring Depth: 20'	
Drilling Method: DPT	Depth to Water: Observed while drilling at approximately 19' bgs	
Drilling Company: Plains Env.	Geologist: Shane Strope	
Site Elevation: 806' amsl	Weather: Sunny, hot 95° F	
Boring Coordinates: 41.579879, -93.638233	General boring Location: Northwest portion of building #2	


Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	25%	N/A PID not working	SB-11 (0-2)	7151-49	0-6" Concrete with gravel subgrade
					6"-5' Silty clay, dark grey, intermixed with red brick clast and fines with coarse gravels and sands, moist, stiff, medium plasticity.
10 ft				5'-10' Silty clay, dark grey, intermixed with black cinders, coarse gravel and sands, moist, stiff, medium plasticity.	
	SB-11 (8-10)		7151-50		
15 ft	17%				10'-15' Silty clay, dark grey, intermixed with black cinders with strong odors and black liquid, moist, stiff, medium plasticity.
			SB-11 (13-15)	7151-51	
20 ft	87%				15'-19' Silty clay, dark grey with strong odors , trace grey mottling moist, stiff, medium plasticity.
					19'-20' Wet, coarse-grained sand (100%), dark grey, strong odors , poorly sorted, loose.
			SB-11 (18-20)	7151-52	Boring terminated at 20' bgs. Refusal not encountered


Boring Log




Site Name: Des Moines TCE	Boring Number: SB-12	Drilling Date: 6/9/2016
Project Number: 103X9025.16.0144	Boring Depth: 20'	
Drilling Method: DPT	Depth to Water: Observed while drilling at approximately 19' bgs	
Drilling Company: Plains Env.	Geologist: Shane Strobe	
Site Elevation: 806' amsl	Weather: Sunny, hot 95° F	
Boring Coordinates: 41.580145, -93.638156	General boring Location: North portion of building #1 - Boiler Room	

Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	22%	N/A PID not working	SB-12 (0-2)	7151-53	0-6" Concrete with gravel subgrade
					6"-5' Silty clay, dark grey with coarse gravels and sands, moist, stiff, medium plasticity.
10 ft	83%			7151-54	5'-10' Silty clay, dark grey, moist, stiff, medium plasticity.
			SB-12 (8-10)		
15 ft	87%			7151-56 (field sheet out of order)	10'-14' Fine-grained fill sand, dark grey, strong odor , slightly saturated, loose.
			SB-12 (13-15)		
20 ft	83%			7151-57	14'-19' Silty clay, dark grey with strong odors , moist, stiff, medium plasticity.
					19'-20' Wet, coarse-grained sand (100%), dark grey, strong odors , poorly sorted, loose.
			SB-12 (18-20)		Boring terminated at 20' bgs. Refusal not encountered

Boring Log						 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-13		Drilling Date: 6/9/2016		
Project Number: 103X9025.16.0144		Boring Depth: 20'				
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 19' bgs				
Drilling Company: Plains Env.		Geologist: Shane Strope				
Site Elevation: 806' amsl		Weather: Sunny, hot 95° F				
Boring Coordinates: 41.580078, -93.638114		General boring Location: South portion of building #1 - Boiler Room				
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description	
5 ft	50%	N/A PID not working	SB-13 (0-2)	7151-58	0-6" Concrete with gravel subgrade	
					6"-10' Silty clay, dark brown with coarse gravels and sands, moist, stiff, medium plasticity.	
10 ft	80%		SB-13 (8-10)	7151-55 (field sheet out of order)		
15 ft	70%				10'-15' Silty clay, dark grey with strong odor , intermixed with fine-grained sand, moist, stiff, medium plasticity.	
			SB-13 (13-15)	7151-59		
20 ft	83%				15'-18' Silty clay, dark grey, moist, stiff, medium plasticity.	
					18'-20' Wet, coarse-grained sand (100%), poorly sorted, loose.	
			SB-13 (18-20)	7151-60	Boring terminated at 20' bgs. Refusal not encountered	

Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-14		Drilling Date: 6/10/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 10' bgs			
Drilling Company: Plains Env.		Geologist: Shane Strobe			
Site Elevation: 806' amsl		Weather: Sunny, hot 95° F			
Boring Coordinates: 41.579471, -93.639275		General boring Location: South portion of production building			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	68%	0.0	SB-14 (0-2)	7151-61	0-6" Concrete with gravel subgrade
		0.0			6"-1' fine-grained fill sand, light brown, dry , loose. 1'-4' Silty clay, dark brown, intermixed with red brick clast, coarse gravel and sand, moist, stiff, medium plasticity. 4'-5' Silty clay, dark grey, moist, stiff, medium plasticity.
10 ft	80%	0.0		7151-62 7151-62FD	5'-10' silty clay, brown, with trace iron oxide streaking, moist, stiff, medium plasticity.
		0.0	SB-14 (8-10)		
15 ft	55%	0.0		7151-63	10'-14' Wet, silty clay, brown soft, high plasticity.
		0.0	SB-14 (13-15)		14'-15' Wet, coarse-grained sand (100%), poorly sorted, loose. Boring terminated at 15' bgs. Refusal not encountered

Boring Log					 TETRA TECH
Site Name: Des Moines TCE		Boring Number: SB-15		Drilling Date: 6/10/2016	
Project Number: 103X9025.16.0144		Boring Depth: 20'			
Drilling Method: DPT		Depth to Water: Observed while drilling at approximately 10' bgs			
Drilling Company: Plains Env.		Geologist: Shane Strobe			
Site Elevation: 806' amsl		Weather: Sunny, hot 95° F			
Boring Coordinates: 41.579795, -93.639046		General boring Location: South portion of production building			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	60%	0.0	SB-15 (0-2)	7151-64	0-6" Concrete with gravel subgrade
		0.0			6"-5' Silty clay, brown, intermixed with trace coarse gravel and sand, moist, stiff, medium plasticity.
10 ft	75%	0.0		7151-65	5'-10' Silty clay, brown, moist, stiff, medium plasticity.
		0.0	SB-15 (8-10)		
15 ft	55%	0.0		7151-66	10'-13' Wet, silty clay, brown soft, high plasticity.
					13'-15' Wet, coarse-grained sand (100%), poorly sorted, loose.
		0.0	SB-15 (13-15)		Boring terminated at 15' bgs. Refusal not encountered

Boring Log



Site Name: Des Moines TCE			Boring Number: SB-16		Drilling Date: 6/10/2016	
Project Number: 103X9025.16.0144			Boring Depth: 20'			
Drilling Method: DPT			Depth to Water: None			
Drilling Company: Plains Env.			Geologist: Shane Strope			
Site Elevation: 806' amsl			Weather: Sunny, hot 95° F			
Boring Coordinates: 41.580706, -93.638149			General boring Location: Northeast portion of production building			
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description	
5 ft	43%	0.0	SB-16 (0-2)	7151-67	0-6" Concrete with gravel subgrade	
		0.0			6"-5' Silty clay, brown with coarse gravels and sands, moist, stiff, medium plasticity. Concrete subgrade slab at 5' bgs.	
10 ft	8%	0.0		7151-68	5'-10' Silty clay, brown, intermixed with fine-grained sand, moist, stiff, medium plasticity. Limited recovery	
		0.0	SB-16 (8-10)			
15 ft	5%	0.0		7151-69	10'-15' Same as above. Limited recovery	
		0.0	SB-16 (13-15)			
20 ft	7%	0.0		7151-70	15'-20' Same as above. Limited recovery	
		0.0	SB-16 (18-20)		Boring terminated at 20' bgs. Refusal not encountered	

Boring Log



Site Name: Des Moines TCE			Boring Number: SB-17		Drilling Date: 6/10/2016
Project Number: 103X9025.16.0144			Boring Depth: 20'		
Drilling Method: DPT			Depth to Water: Observed while drilling at approximately 15' bgs		
Drilling Company: Plains Env.			Geologist: Shane Strope		
Site Elevation: 806' amsl			Weather: Sunny, hot 95° F		
Boring Coordinates: 41.580700, -93.639496			General boring Location: Northwest portion of production building		
Depth (ft)	% Recovery	PID (ppb)	External Sample ID	EPA Sample ID	Description
5 ft	58%	0.0	SB-17 (0-2)	7151-71	0-6" Concrete with gravel subgrade
		0.0			6"-5' Silty clay, dark grey, intermixed with red brick clast and black cinders, concrete clast with coarse gravels and sands, moist, stiff, medium plasticity.
10 ft	67%	0.0	SB-17 (8-10)	7151-72 7151-72FD	5'-10' Silty clay, dark grey, moist, stiff, medium plasticity.
		0.0			
15 ft	87%	0.0	SB-17 (13-15)	7151-73 7151-73FD	10'-15' Silty clay, brown, moist, stiff, medium plasticity.
		0.0			
20 ft	60%	0.0	SB-17 (15-18)	7151-74	15'-18' Wet, silty clay, brown, soft, high plasticity.
		0.0			18'-20' Wet, coarse-grained sand (100%), poorly sorted, loose.
		0.0			Boring terminated at 20' bgs. Refusal not encountered